treatment of tuberculosis. Under proper supervision it is practically harmless.

8. In glandular tuberculosis tuberculin is of signal value.

9. Experience and painstaking supervision are necessary to avoid injurious effects.

10. In general, the tuberculins are of definite value in diagnosis and therapeusis.

Discussion.

Dr. Martin Fischer presented a great variety of different pathological specimens embracing all the various forms of tuberculosis of the different organs, various forms of tuberculosis of the different organs. Some of the lesions were not discernible macroscopically, but could be plainly seen by section through the microscope. The lung specimens were especially interesting, embracing all the various stages up to cavity formation. Dr. Fischer stated that the percentage of tuberculosis found at autopsy was enormous, the great majority of all individuals at some time having had tuberculosis in some form. Many times this could not be diagnosed microscopically, but could be by the inoculation test. He thought that pneumonia was becoming a more dangerous disease than tuberculosis.

Dr. Emmet Rixford spoke on tuberculosis of bone, stating that it was extremely common, especially in the younger ages. The position of the tubercular lesion is more common to the epiphesis than the shaft of long bones, possibly because of its circulatory position. The lesion occurring in the form of a triangle would indicate emboli. Trauma may be considered, but not always the cause. Tuberculosis of the epiphesis very easily involves the joint. He doubts very much if there is such a thing as primary involvement of the synovial membrane, or of the cartilages. It is often impossible to locate the tubercular focus. Hyperemia treatment and tuberculins have come to stay. Probably Percival Pott was first to commence the hyperemia treatment by using a hot iron up and down the back in spinal trouble, causing a hyperemia; immobility was the treatment of old. Not free from danger. A certain amount of mobility is better. Hyperemia of Bier in orthopedic surgery has demonstrated its efficiency in tuberculosis of the extremities. Don't overdo the Bier method. Hyperemia nor stasis is the desired condition. When treating osseous tuberculosis, although the symptoms have disappeared, the patient is not necessarily well. It is a serious matter to operate on a hip joint that has been the seat of a tubercular infection.

Dr. Rixford presented a patient who had had a very extensive tubercular affection around the anus, having been operated on for this condition before. A complete excision of the tubercular area was made; recurrence took place. Patient was sent to the mountains. The spine later became involved and partial paralysis ensued. Tuberculin caused the paralysis to disappear. The wrist being involved, responded to the Bier treatment. The recovery in this case was credited to tuberculin and Bier treatment.

Dr. Chas. M. Cooper presented a number of X-ray plates, demonstrating the various stages of lung involvement in tubercular lesions, as well as bone and other different organs.

The doctor described the method of interpreting X-ray plates and the manner of detecting various pathological lesions. By this method lesions were often detected which gave no clinical symptoms. A number of plates showing stone in the kidney and ureters were also presented.

Dr. S. H. Buteau, in discussing genito-urinary tuberculosis, said that finding tubercle bacilli in the urine did not always indicate kidney involvement; when this was accompanied by the classical, clinical symptoms of a kidney lesion, then we should make the diagnosis. He thought it possible by too frequent catheterization of a non-infected ureter to infect a non-infected kidney. Tuberculosis of the bladder in his experience was generally secondary to a kidney lesion. Tuberculin will aggravate tubercular symptoms, especially if the kidney is involved. He thought the Harris segregation a much safer instrument for the general practitioner. Tuberculosis of the kidney does not always mean removal of the same. Some of the newer remedies should be instituted first.

Dr. Geo. Evans commended the splendid work Dr. Cooper was doing with the X-ray, but thought a great many of these conditions should be diagnosed clinically. The fact that these conditions can be demonstrated with the X-ray should stimulate us to more accurate diagnosis. Speaking of tuberculin administration, he thought it was being handled too loosely. We are now on the threshold of a specific treatment of tuberculosis. Tuberculin is still a two-edged sword. Local reaction at signs of injection is a good guide to index of dosage. Small doses safest. Reaction of bovine and human tuberculin are generally antagonistic.

Dr. L. Loran Riggin closed the discussion. He stated that he had secured two positions for patients with pulmonary tuberculosis in the dynamo room of the electric power company. The ozone in this department is very apparent; both patients have greatly improved.

THE IMMEDIATE REMOVAL TREATMENT OF MORPHIN HABITUATION.*

By R. E. BERING, M. D., Tulare.

At our meeting held at Riverside in '05 I presented a short paper on the method of treating patients with hyoscin hydrobromate for the morphin habit. At that time I gave the members all the information I then possessed. During the time that has intervened I have received many letters from different sections of the country asking for more detailed information. The purpose of this paper is to provide such information as has grown out of my own increased experience and to present it to you as clearly as possible that you may the more successfully use the treatment in your own practice.

In order that you may observe a practical demonstration of this method the Santa Clara County Hospital has placed at my disposal the facilities of the hospital where you will find two patients under course of treatment. One is a morphin patient provided by Dr. H. B. Gates. This patient has used the drug for fifteen years. The other is a victim of cocain who has been in the habit of using sixty grains of the drug daily. You are cordially invited to visit these patients at your convenience.

The treatment of the morphin habit is divided into three distinct periods, each of which is equally important. We may designate these periods as, first, the period of preparation; second, the period of treatment with hyoscin; third, the period of convalescence.

I shall attempt to present briefly what my own experience has shown to be the most effective method during each of these periods.

In treating a case of morphin habituation it is very necessary to gain the confidence of the patient. If

* Read at the Thirty-ninth Annual Meeting of the State Society, San Jose, April, 1909.

you succeed well in this the patient's attitude towards his treatment will remove many difficulties.

It is imperative that a competent nurse attend the patient constantly during the administration of hyoscin. The room should be free from furniture or any article which may give the patient the basis for distressing illusions. The room should be darkened as the light may cause serious iritis.

The first period, that of preparation of the patient for the administration of hyoscin by the elimination of toxic material requires about one week. To accomplish this I open the pores of the skin thoroughly by using vapor baths and small doses of pilocarpin. For the kidneys I use any effective diuretic. For the bowels powdered cascara sagrada 24 grains, calomel 24 grains, powdered ipecac 2 grains, resinous extract podophyllin 3 grains, strychnin sulphate 1-3 grain, make into 9 capsules, giving one at 5, one at 8 and one at 10 p. m. on alternate nights until the nine capsules are given. In addition use magnesia sulphate, castor oil, high enemas, etc. Should this treatment fail to secure free purgation within twelve hours after each administration I use 1-20 grain strychnin sulphate hypodermically every four hours until three doses are given. This applies to a man of average size.

While the dose of strychnin recommended may seem excessive it must be remembered that morphin patients *require* this large dosage to start peristaltic action on the almost paralyzed bowel, and that its administration is perfectly safe.

During this first period the patient is encouraged to carefully limit the amount of morphin he uses, as more thorough elimination of toxic material is thus secured.

The patient is now in condition to enter the second period of treatment, that of administration of hyoscin and the complete withdrawal of morphin. About two hours before the patient would usually take his first daily dose of morphin begin the hyoscin treatment, and from that time on do not allow any morphin to be used. Endeavor to have the patient thoroughly under the hyoscin before the time at which he has been accustomed to take his first daily dose of morphin.

Give 1-300 grain of hyoscin hypodermically every half hour untli its *mild* physiological action is secured. This condition is indicated by redness of the face, dryness of the throat, dilatation of the pupils, mild hallucinations, and the slowing of the pulse fifteen or twenty beats per minute. One or more doses of hyoscin will put the patient to sleep for several hours but he will not again sleep during this period of treatment.

Discontinue the hyoscin till the patient awakes, then resume in increased doses say, 1-200 grain every half hour until the patient again manifests the mild physiological effects above mentioned.

If proper elimination has been secured we now have freedom from pain and an absence of the more pronounced nervous symptoms that would otherwise follow the abrupt withdrawal of morphin. There should be no chilly feeling, vomiting, purging, profuse sweating, aching of the bones, joints or muscles, and there should be no sign of heart failure. In fact the patient should be completely deprived of morphin and experience no more discomfort than usually attends a case of la grippe.

Contrast this condition with the picture of a morphin patient who has been completely deprived of the drug without being fortified by treatment. I quote from Pepper's System of Medicine, pages 657-8-9:

"The nervous system, whether it has been accustomed for months only or for years to the influence of opiates, is upon their withdrawal forthwith thrown into derangements of the most serious and widespread kind. In the course of a few hours after the last dose the steadying influence of the drug disappears. General malaise is associated with progressive restlessness, the ability to perform the ordinary duties of life gives way to profound indifference; precordial distress, accompanied by cough, is followed by insomnia, hallucinations, and sometimes mania. The habitual pallor of the face is replaced by a deep flush or cyanosis. The heart's action becomes excited or irregular, then feeble; the pulse, at first tense, becomes slow, thready, and irregular. Colliquative sweats appear. Attacks of yawning and sneezing are followed by convulsive twitching of the hands. Speech becomes hesitating, drawling, and stuttering. These phenomena are associated with a sense of perfect prostration, which obliges the patient to take to his bed. Pain in the back and limbs followed by neuralgias occur. Complete anorexia, with easily provoked or even causeless vomiting and persistent nausea, and diarrhea difficult to control, add to the gravity of the condition. . . .

"During the early days of abstinence the evidences of cardiac failure are marked. Enfeeblement of the first sound, irregularity of the heart's action, and intermissions are common. . . . Restlessness is continuous and very often intense, and patients are with difficulty kept in bed; if left to themselves they move frantically about the room, moaning, bewailing their condition, and begging the attendant for that which alone is capable of relieving their distress. This condition gradually subsides, giving way to one of profound exhaustion. . . . The exhaustion, due to the reaction of the nervous system deprived of the stimulus of the drug, is on the one hand favored by pre-existing derangements of the nutritive process, and on the other increased by the pain, wakefulness, diarrhea, and vomiting which accompany it. The appearance of the patient is now most pitiable: the countenance is blanched and pinched, the body occasionally drenched with sweat, the heart's action feeble, and the pulse thready and irregular."

It is well to keep in mind that slowing of the pulse to 50 or 55 is to be expected under hyoscin treatment, but so long as the pulse is of good tone and full volume do not use a stimulant. I have had patients whose pulse beat went below 50 and one ran as low as 36. This case required heroic treatment. The pulse rate may increase to 100 or 120 beats per minute instead of decreasing, but this condition is due to excitement and not to the hyoscin treatment.

In the event of the pulse going lower than 50, I give strychnin sulphate 1-20 grain and spartein sulphate 1 grain hypodermically, discontinuing the hyoscin until an improvement in the pulse rate is noted. The practitioner who desires to do so, however, may re-enforce the heart action with 1 grain

spartein sulphate or, of 1-100 grain digitalin administered hypodermically every six hours.

In some cases, where thorough elimination has not been secured, or, where the patient has used atrophin with his morphin a larger dose of hyoscin is indicated. I have had occasion to increase the dose to 1-100 grain every half hour for a number of doses, but as soon as the patient is under the hyoscin the dose should be reduced to the normal.

After the patient is well under the influence of hyoscin *give just enough* to maintain its mild physiological action. This amount varies with the patient. If he should suffer pain, more hyoscin is indicated. Do not be afraid to give a dose every half hour *if needed* but discontinue as soon as freedom from pain is secured.

During this second period, and after the sleep that follows the administration of the first dose of hyoscin and the withdrawal of morphin, the patient is restless, tries to get up and move about, talks at random, has many illusions and delusions. Cocain patients manifest the symptoms in a marked degree, it being necessary at times to restrain them, but the morphin patient is easily controlled and is never boisterous.

These symptoms, however, together with the physical ones mentioned above may seem formidable to one unfamiliar with the physiological action of hyoscin, but there is no cause for alarm as the symptoms will all disappear with the discontinuation of the hyoscin treatment. It only requires that some one be with the patient to prevent him from getting out of bed and falling, as co-ordination is impaired when one is well under the influence of hyoscin.

Keep up the *mild physiological* action of hyoscin from thirty to forty hours; in most cases I suggest the latter. During all this period as well as the one following, careful attention should be given to the bowels as persistent constipation may ensue. To prevent this give magnesia sulphate, citrate of magnesia, phosphate of soda, etc. See that the patient has water at frequent intervals to make up for the fluid lost through the skin. It further dilutes the toxins and helps to eliminate them through the skin and kidneys. Give liquid nourishment during this period.

The patient now enters the third and last period of treatment, that of convalescence, about a week having been devoted to the first period and two days to the second, nine days in all. The length of period of convalescence will depend upon the patient's recuperative powers, and will extend over a period of three to five weeks. Thus requiring a total of from five to six weeks in sanitarium.

We now have to deal with a neurasthenic whose convalescence is like that of a patient recovering from a severe illness.

It is better for the patient to remain in bed and to take only liquid nourishment every two or three hours during the first week of convalescence, after which time solid foods may be used.

I wish here to mention and emphasize one of the most important features of this, the third stage of treatment.

The patient has had no sleep since that at the beginning of the hyoscin treatment, and he may be in an extremely weak, exhausted, and irritable condition, due to loss of sleep and lack of nourishment, and to the re-adjusting of vital functions in response to changed conditions. Tact, patience, and good judgment on the part of the attendant are essential at this time.

It is highly important that the patient now secure proper rest and healthful sleep during convalescence. In no article on hyoscin treatment, so far as I am informed, is more said than that the patient should woo sleep for himself. His inability to do this has often been the cause of unfavorable results. Since realizing this important feature I have had no failures from this source.

About five or ten hours after the patient has had his last dose of hyoscin, and before he is entirely free from its influence, I give bromide of potash 30 grains and chloral hydrate 10 grains. This usually provides a number of hours of the much needed sleep. Keep the patient well under bromide and chloral for a day or two, or, until he has secured sufficient sleep, then give the dose only often enough to allay the intense nervousness from which he suffers.

The second day after discontinuing the hyoscin give veronal 7½ grains at 4 p. m., repeating the dose in two hours. Sulphonal may be substituted for the veronal. The patient should not know what he is taking or what he is taking it for. Continue the veronal daily for a week, then use only on alternate nights for a week or two, then discontinue. I usually give a tonic of I. Q. & S. three times a day.

After the tenth day of convalescence require the patient to take sufficient exercise daily to produce mild fatigue and to retire at an early hour. If he has any pain or diarrhea it is due to autointoxication and should receive careful attention.

At the end of the period of convalescence the patient has increased in weight twenty to thirty pounds. He has normal appetite and sleeps without the aid of a soporific. He has returned to a normal frame of mind and has no desire whatever for his accustomed drug. He returns to his customary occupation with confidence in himself and the assurance that he is forever free from the slavery to which he has long been subjected.

This course of treatment with modifications applies to the treatment of alcoholism and cocain patients as well as to those addicted to the use of morphin.

Of the many cases treated during the past seven years permanent cures can be shown in more than 75%.

I am conscious of the fact that in this brief paper I have been unable to mention various details that may arise in special cases. But I have attempted to emphasize the essentials in a general course of treatment in sufficient detail that the method of treatment may be successfully used by any careful practitioner.